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Fibroblast growth factor receptor 2b protein structural changes due to the interaction with naringin

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ABSTRACT

FGFR2b plays a significant role in cell signaling pathway. Genetic alterations of the tyrosine kinase domain of FGFR2b, point mutations for example, occur in many cancers such as breast cancer, ovarian cancer. Several epidemiological, *in vitro* and animal studies have demonstrated that flavonoids can influence the growth and proliferation of many different human tumor types. Naringin significantly regulates phosphorylation of two members of the PI3K/AKT and RAS/MAPK signal transduction pathways decreases. The present study was performed to analyze its tertiary structure changes upon interaction with naringin. Expression of recombinant protein was induced with 1mM IPTG at 37 ºC and analyzed by SDS polyacrylamide gel electrophoresis (SDS-PAGE). The protein was purified by Ni^{2+}-NTA affinity chromatography. The protein sample was dialyzed and then used to analyze its interaction with both wild type and mutant SH2 domains of PLC, using polyacrylamide gel electrophoresis (PAGE). Chemical denaturation and intrinsic fluorescence spectra of the purified proteins were carried out by adding different concentrations of as naringin. The fluorescence emission spectra of recombinant kinase domain of FGFR2b (38 kDa) in the presence of naringin shows an increase in fluorescence maximum emission wavelength (nm) and FGFR2b protein was unstable. Regarding to the results, the tertiary structural change of kinase domain reflects a conformational alteration within the protein that is important for the biological function of FGFR2b.

Key words: Fibroblast growth factor receptor; Kinase domain; Naringin; Fluorescence spectroscopy